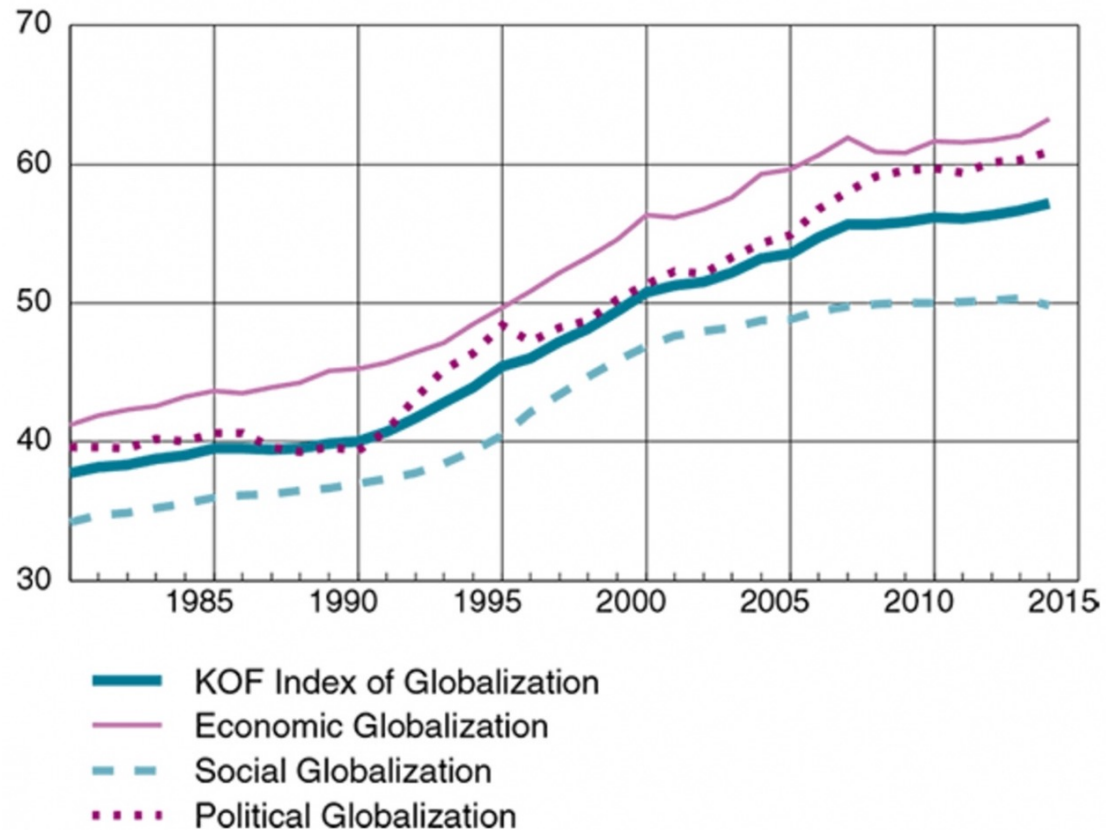


A globe of the Earth is centered in the image, rendered in a blue, wireframe style. Overlaid on the globe is a complex network of white lines and nodes, representing a global supply chain or network analysis. The background is a dark blue gradient.

NETWORK ANALYSIS AND GLOBAL SUPPLY CHAIN

Graph 1

KOF Index of Globalization Worldwide



Cause of globalization

- Improvement of technology
- Improvement of capital mobility
- Improvement of transport
- Higher labor mobility
- Rising of multinational companies
- Lower Tariffs

Methodology and Data



Run Gephi program

We use this program and generate all data that we have collected to find key variables such as the average degree, Network Diameter, Graph Density, Modularity, Avg. Clustering Coefficient, etc.



Interpret the results

We use the diagram to interpret the role of each countries in the world market and identify the relationship of each sectors

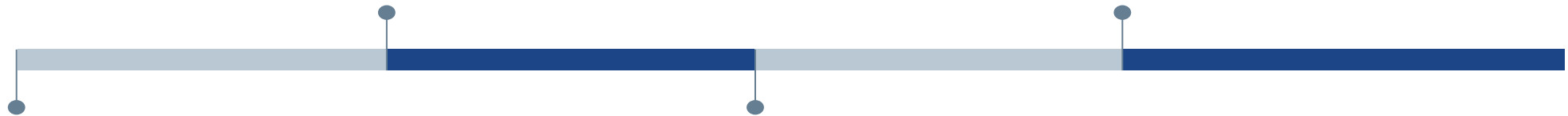


Collecting data (WIOD)

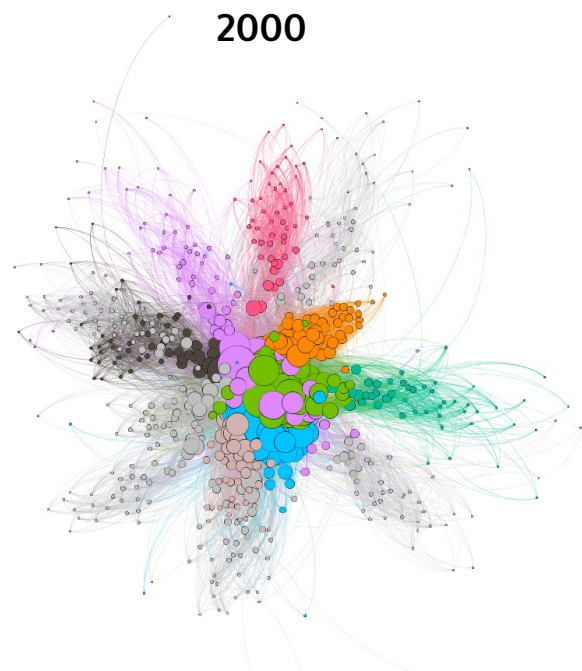
Download the WIOD data in each years that AJ. provided us and generate the data on Gephi program.



Exporting the diagrams and data

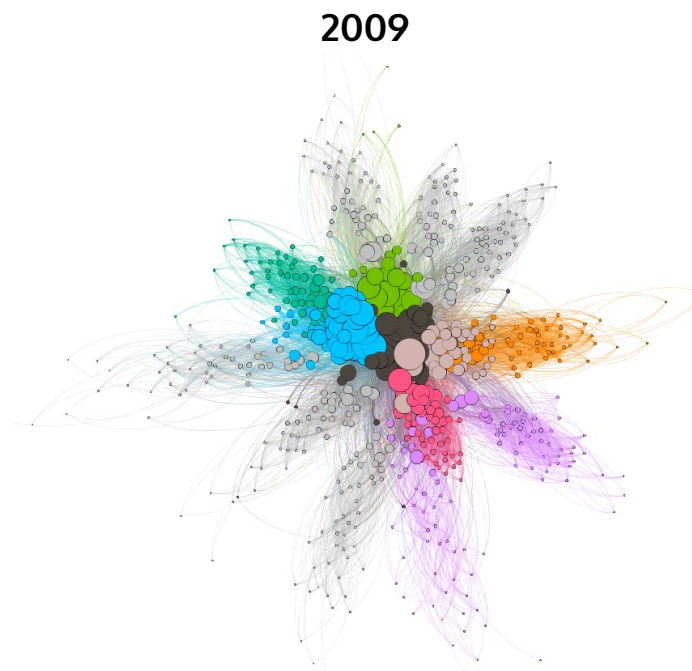


Network diagram



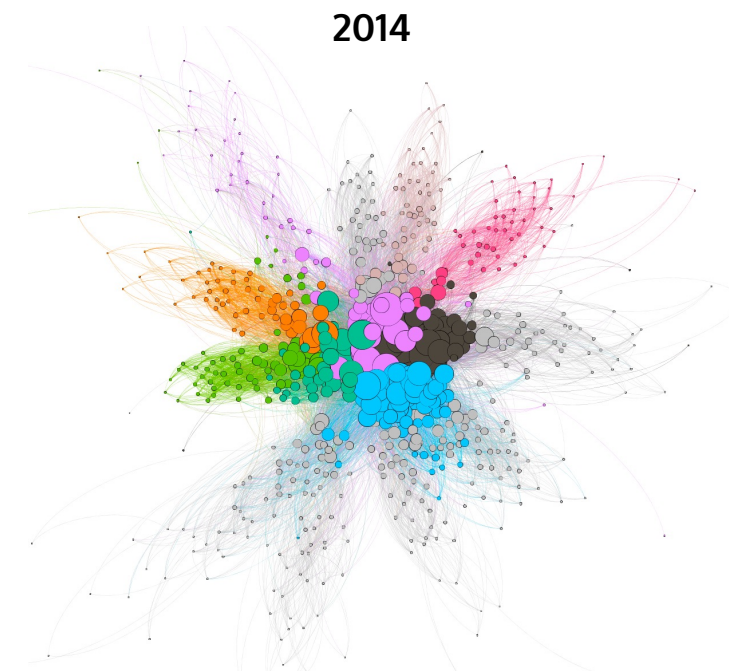
The highest Eigen-vector centrality

- Row
- EU
- USA
- Japan
- Taiwan



The highest Eigen-vector centrality

- Row
- EU
- USA
- China
- Korea

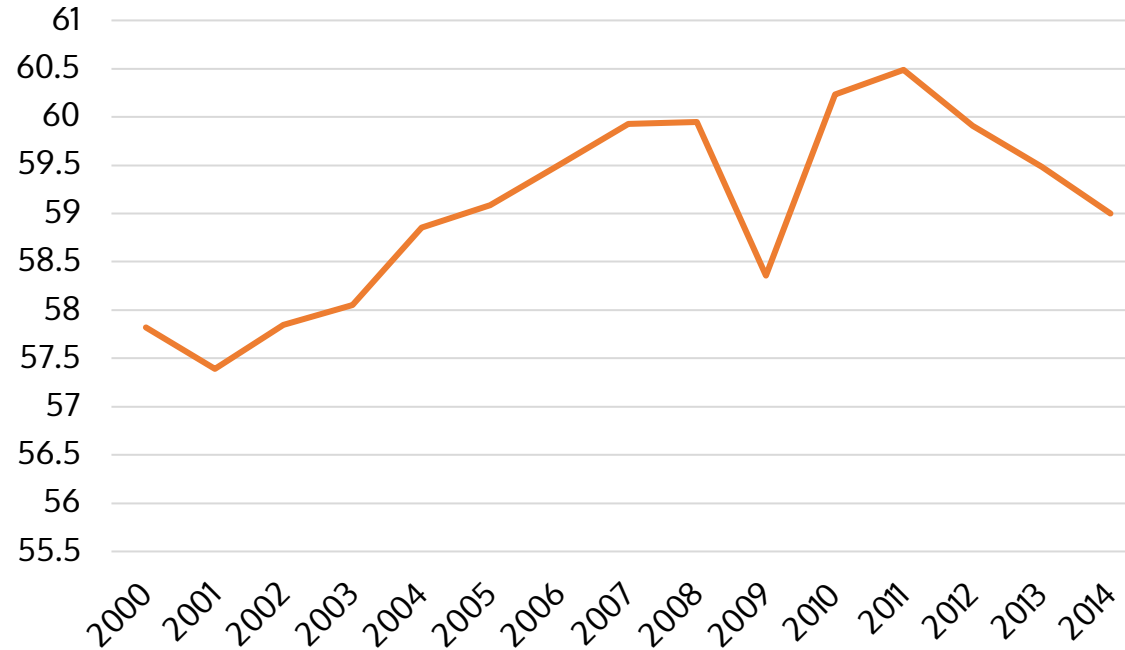


The highest Eigen-vector centrality

- Row
- EU
- China
- USA
- Korea (sector 17)

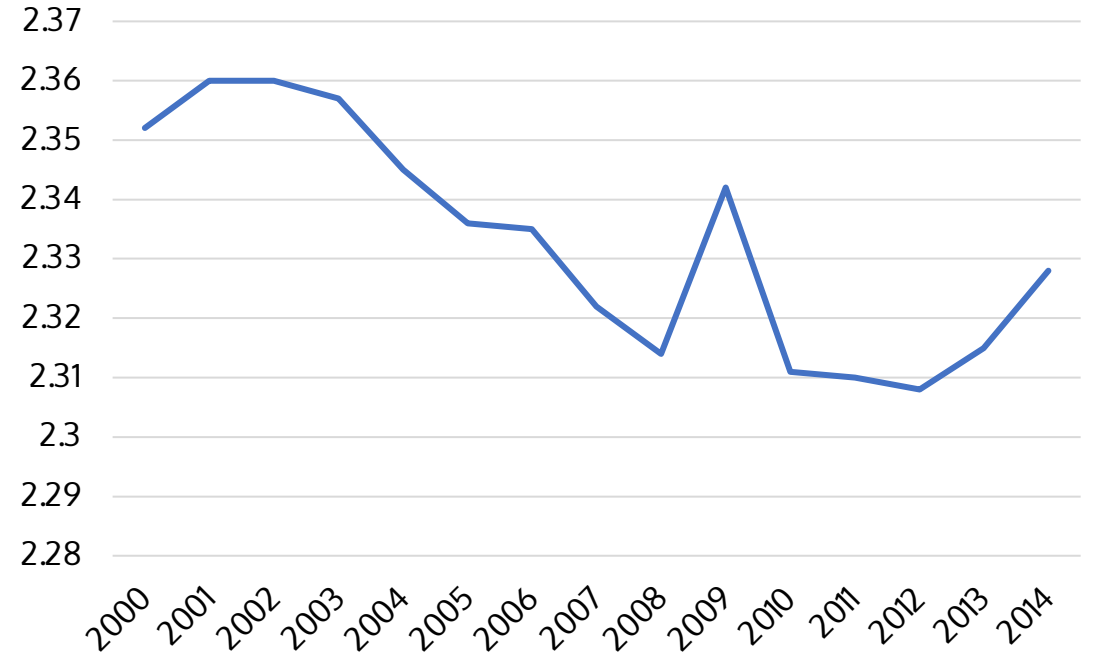
Network indicators

Average Degree



Avg linkage between each industry continually increase until it drop in 2008 then drastically increase in 2009 and drop again in 2012

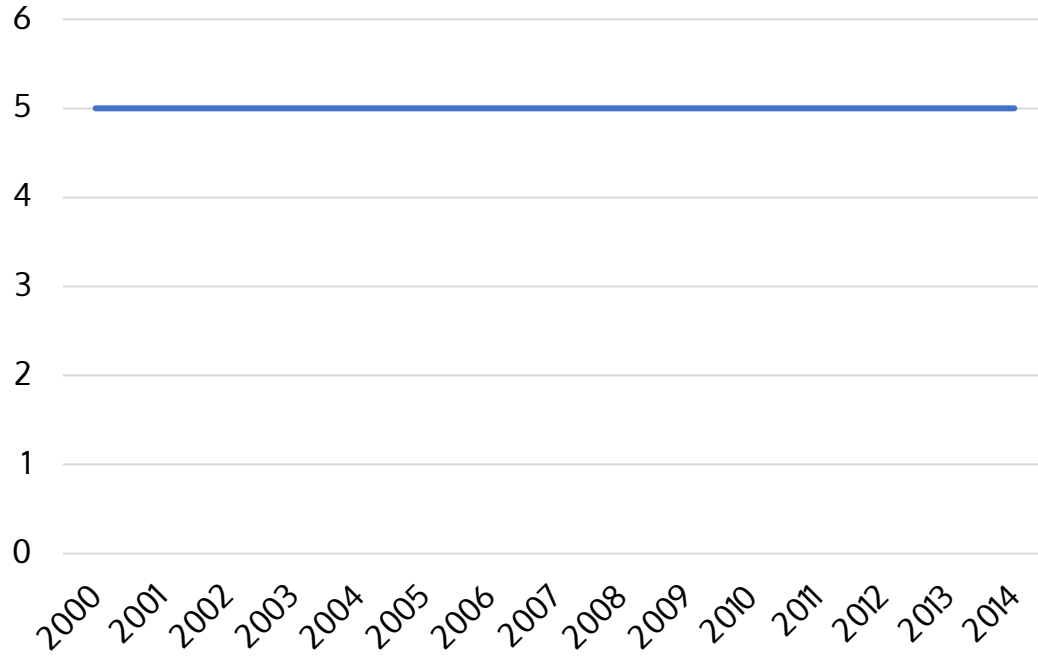
Average Weighted Degree



The trade volume and linkage is increasing along the time even though it slightly drop in 2008-2009 but it still increase trough out the time

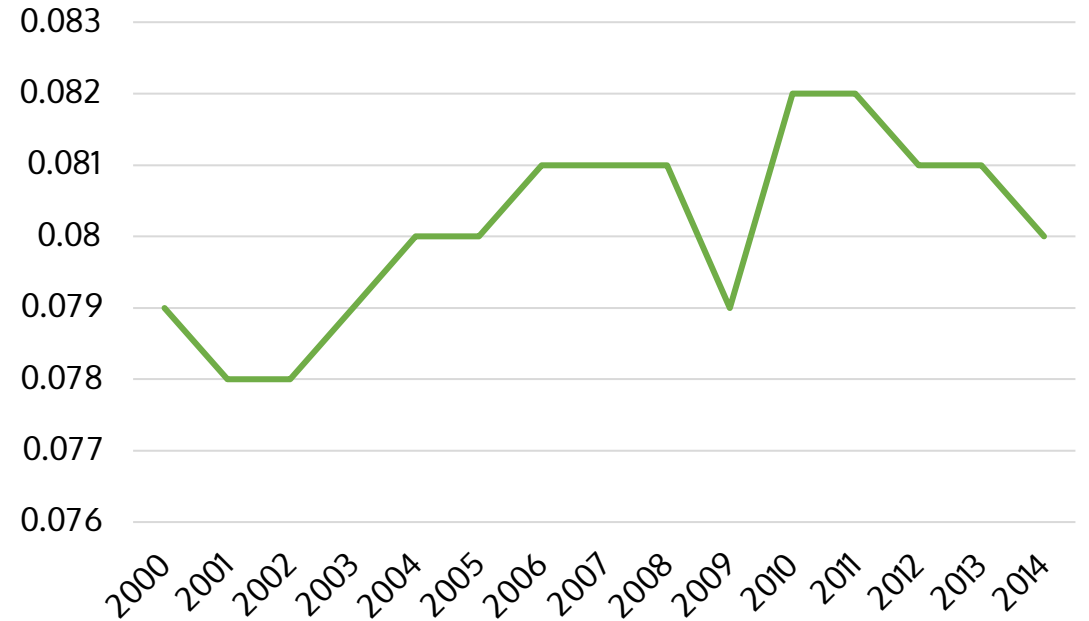
Network indicators

Network Diameter



According to network diameter, the longest link remain at 5 throughout 2000-2014

Graph Density



Graph density has similar pattern like avg degree the connection between each industry increasing then drop during 2008-2009

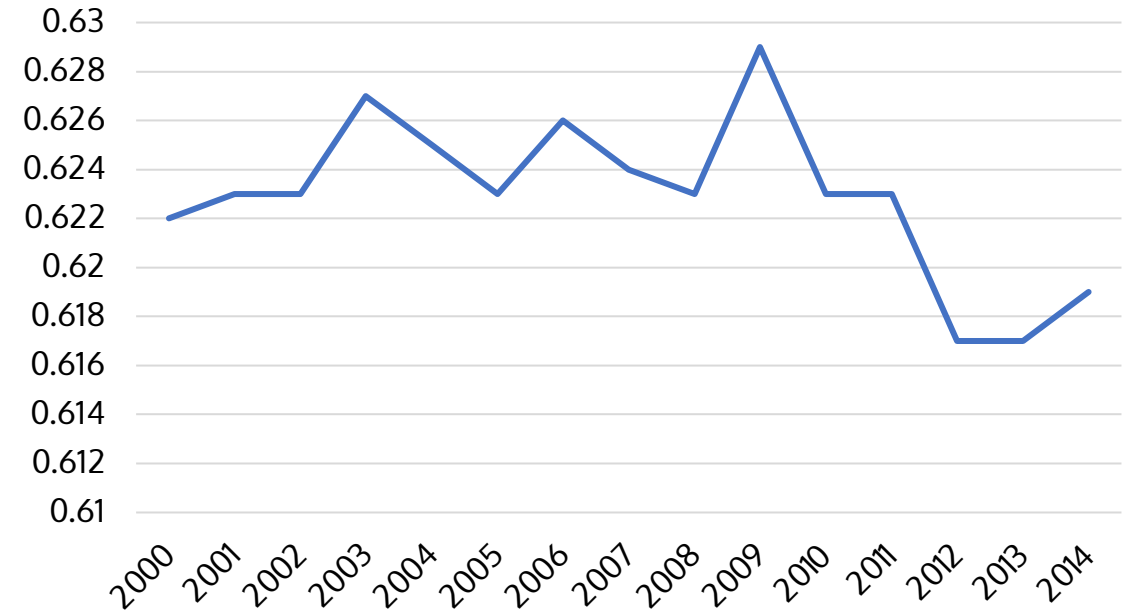
Network indicators

Modularity



According to the modularity index, the ability to create more subgroup is around 6.9 before it increase in 2008 to 7.1 and continually drop but still remain around 7

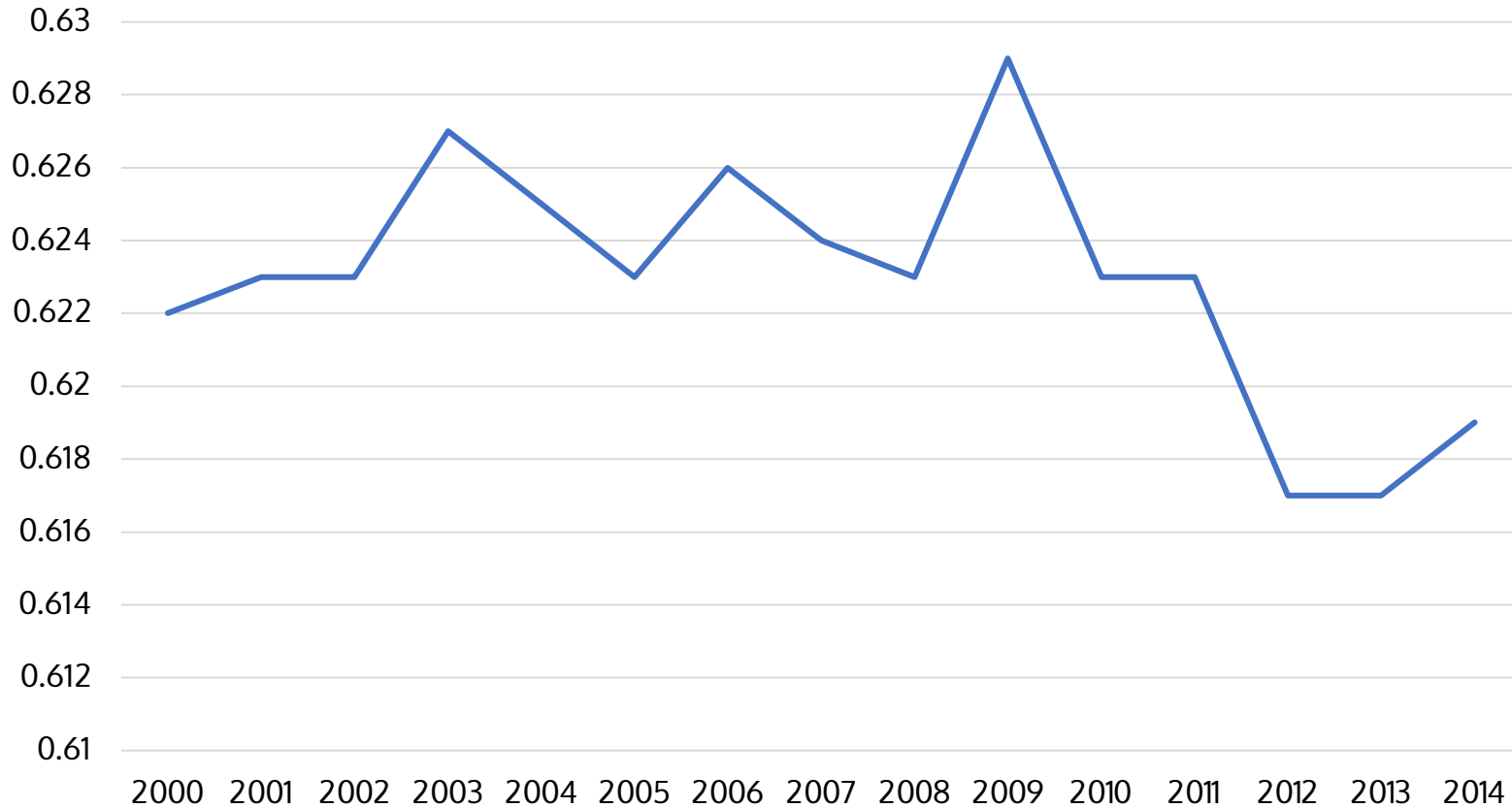
Avg. Cluster Coefficient



The avg cluster coefficient fluctuates around 0.6, imply that there are some sector that are important more than other sector, before it drops at the end of the year 2011

Task 2: indicators

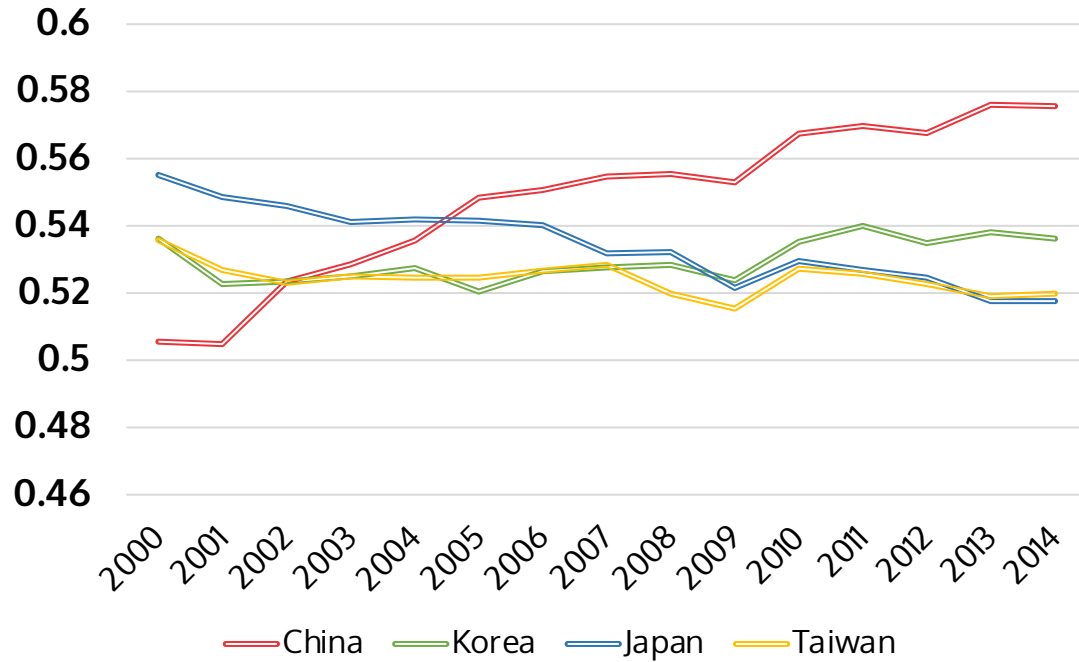
Average Path Length



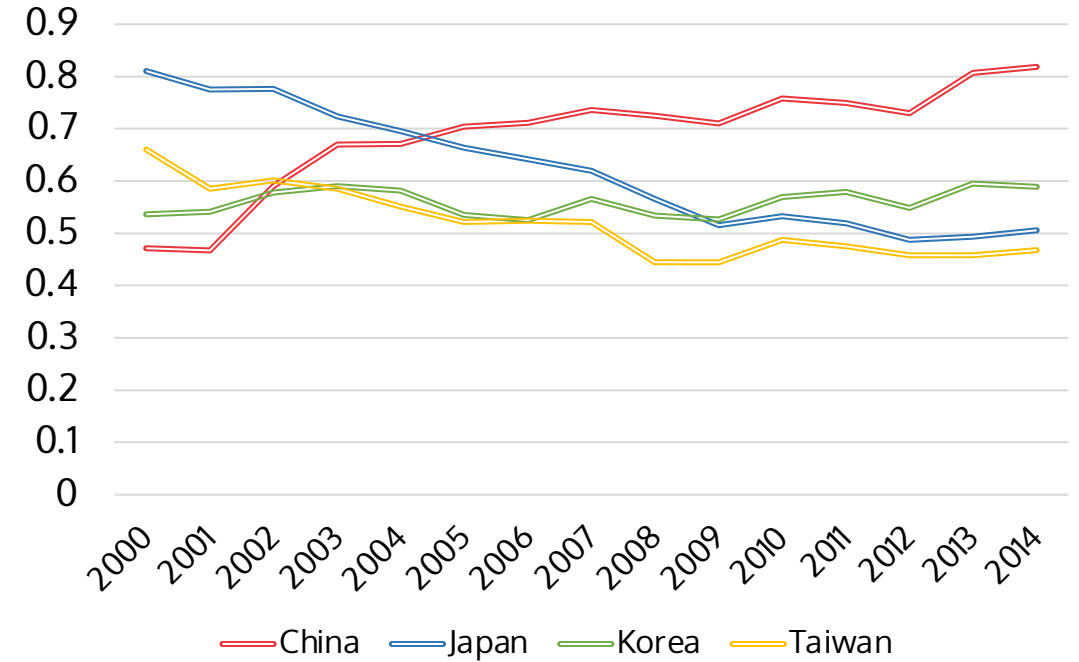
Beginning with around 2.3 and continually drop until 2008 the avg path length drastically increase and drop right away before it increase in 2012 where after the financial crisis

China gradually grow to be one of the important player in world electronic sector

Closeness centrality of Electronic sector by countries



Eigen-vector centrality of Electronic sector by countries

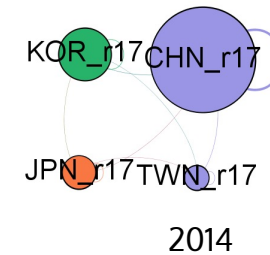
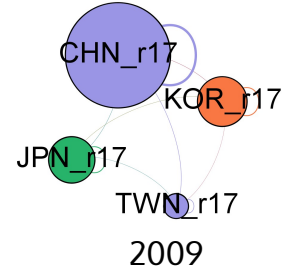
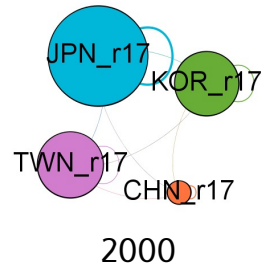


China shows an increasing number of Closeness and Eigen-vector centrality. While Japan shows a declining trend

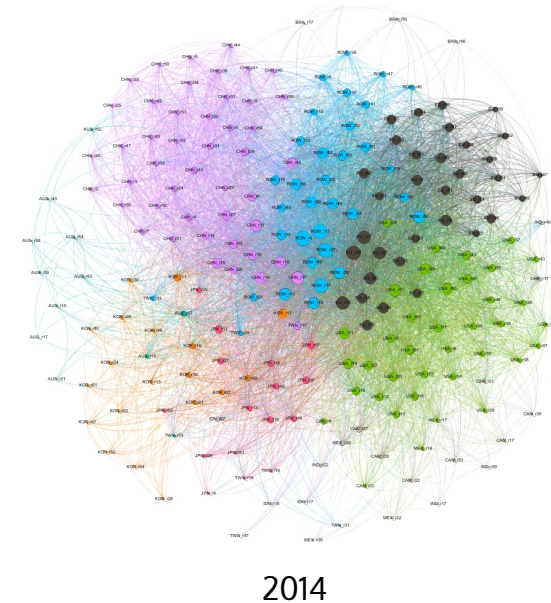
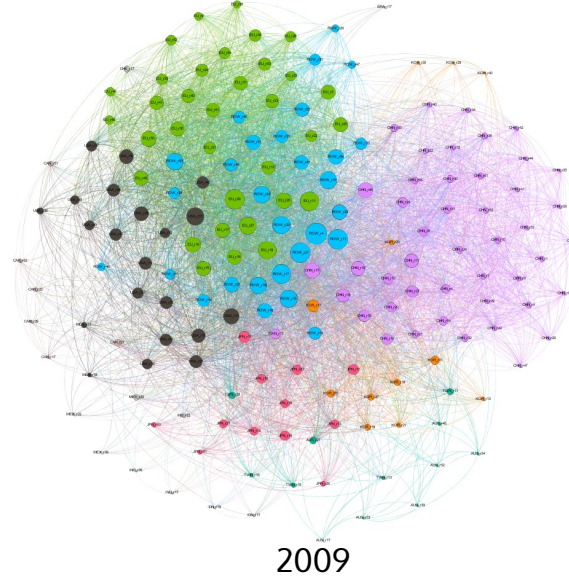
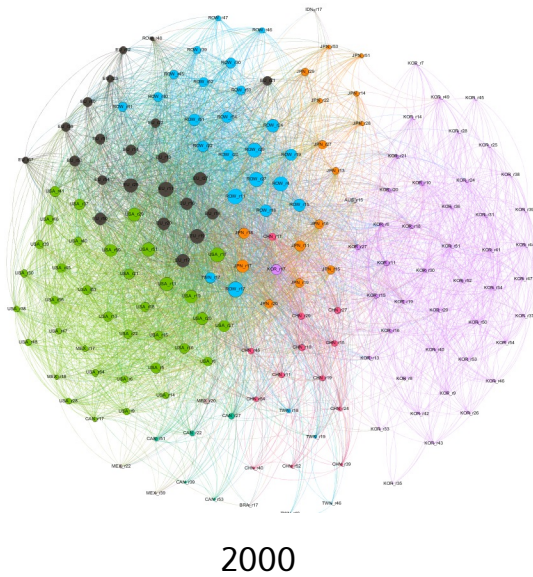
- **The fall of Japanese electronic industry** due to the appreciation of and its electronic component manufacturers that could not regain the competitiveness to Korea and Taiwan.
- **China proved itself to be one of the electronic leader** after the liberalization of the economy and its strong supply chain

The relationship between four major producers in electronics industry

Electronics industry trade within in China, Japan, Korea and Taiwan

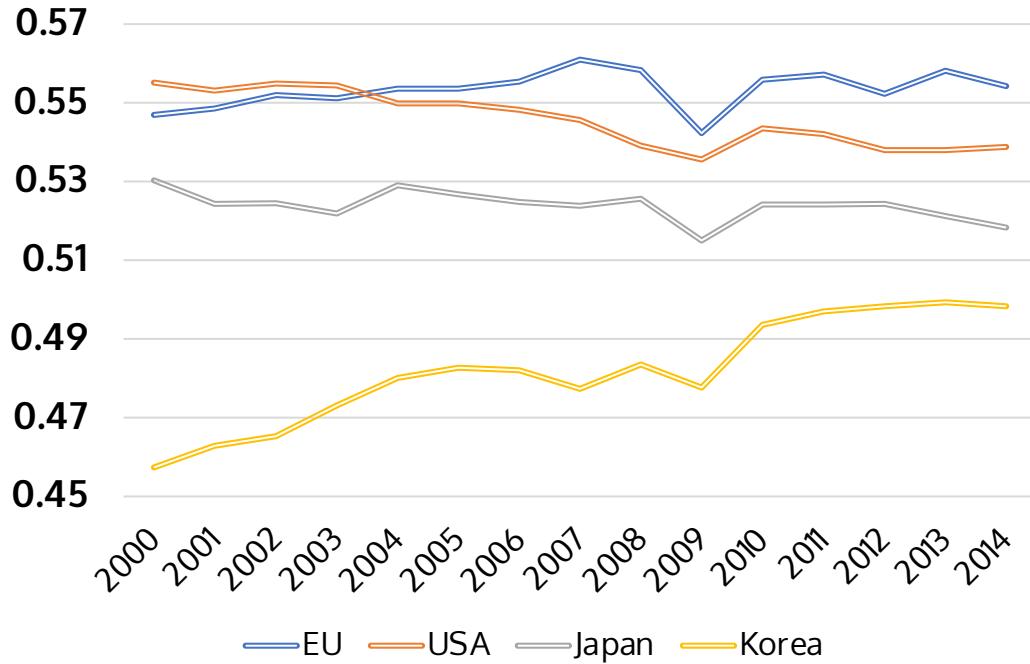


the linkage of electronics industry in China, Japan, Korea and Taiwan to other sectors across the world

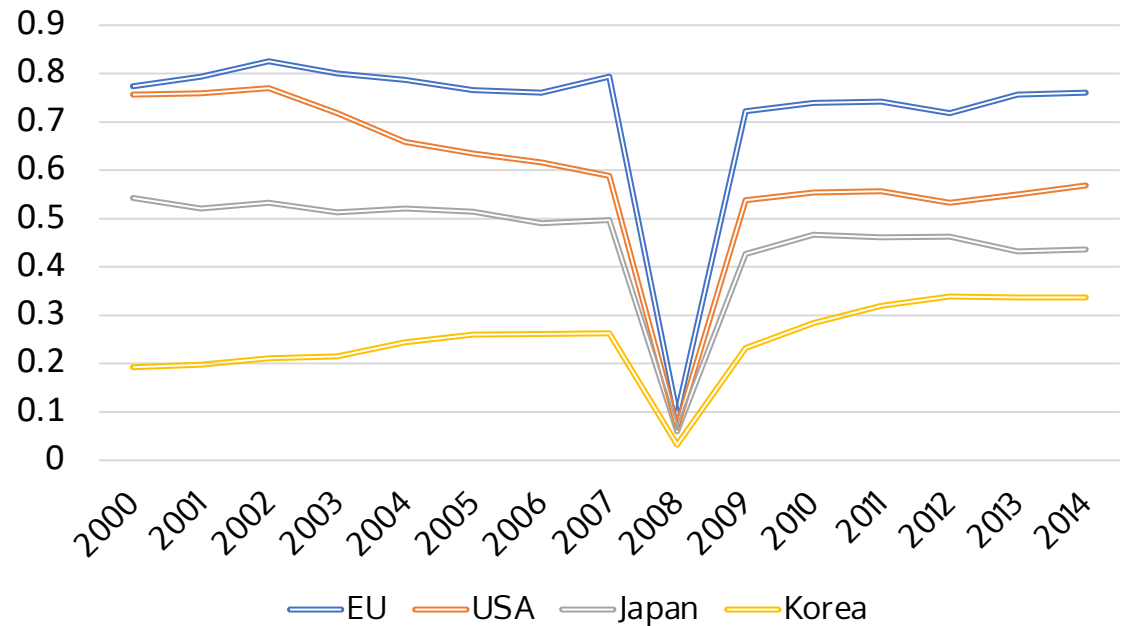


Automotive industry was hugely impacted by the slump in the world economy

Closeness centrality of Automotive sector by countries



Eigen-vector centrality of Automotive sector by countries

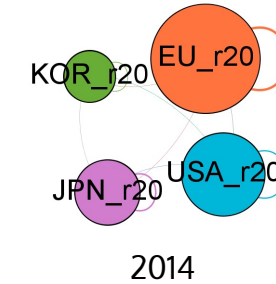
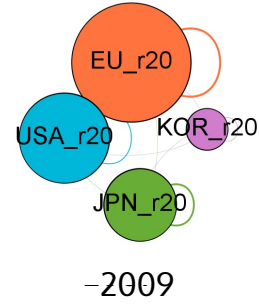
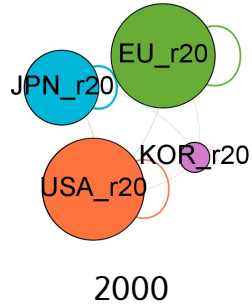


Closeness centrality are stable for most countries but there is increasing trend for South Korea.
Eigen-vector drop significantly for all countries during 2008 financial crisis

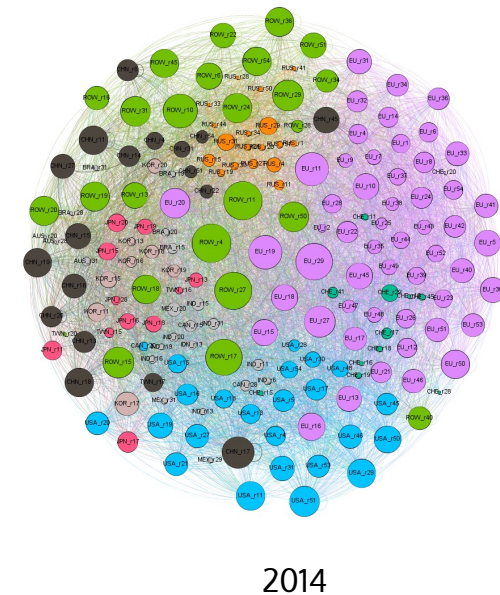
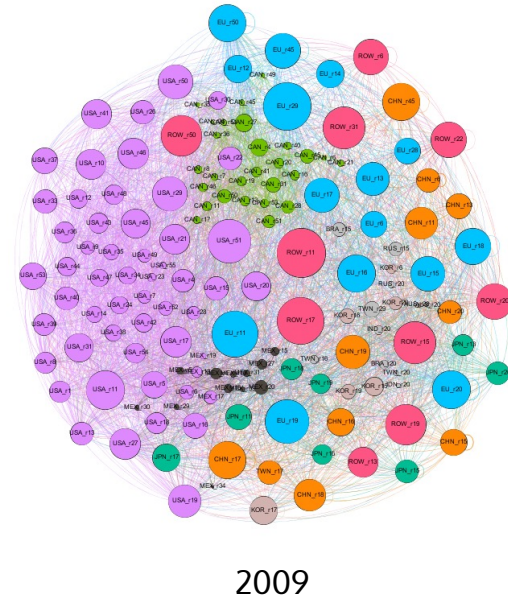
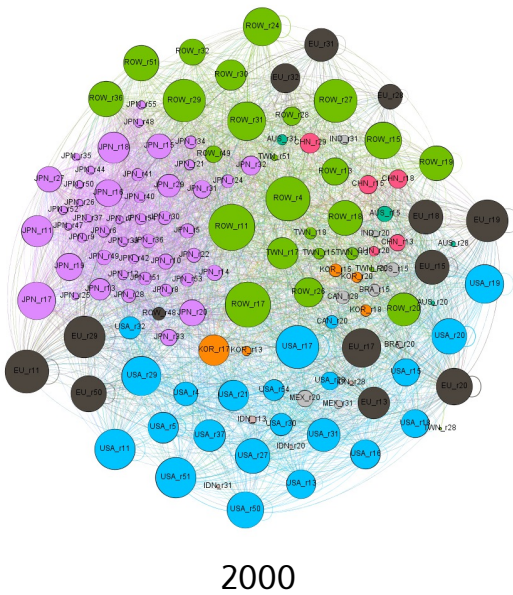
- In 2008, Short-term sale volume loss due to world economic crisis, and this recession impacted all producers
- In the long term, there is change in market share due to emergence of new companies operating in own national market

Task 3: The relationship between four major producers in automotive industry

Automotive industry trade within in EU, USA, Japan and Korea



the linkage of automotive industry in EU, USA, Japan and Korea to other sectors across the world



Policy recommendation:

There are some adjustments needed, in order to prevent supply shortage and encourage more producers to the market



Subsidize and encourage R&D for the industry that highly link with other sectors, so there will be lower risk of the supply shortage



Reduce export tax to encourage the producers to play in the world market



Encourage knowledge sharing and import technology with other countries so that producers can entry and the market and manage supply material



Thank You

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